

## Effectiveness of Face Masks and Masking Policies in Preventing COVID-19 Transmission in Real-World Settings: A Systematic Literature Review

INPLASY202460011

doi: 10.37766/inplasy2024.6.0011

Received: 04 June 2024

Published: 04 June 2024

Crespo, N; Fornasier, J; Ramers, C; Elder, J.

**Corresponding author:**

Noe Crespo

ncrespo@sdsu.edu

**Author Affiliation:**

San Diego State University.

**ADMINISTRATIVE INFORMATION**

**Support** - Dr. Crespo received support from Family Health Centers of San Diego's Scientist in Residence Program sponsored by The Conrad Prebys Foundation.

**Review Stage at time of this submission** - Data extraction.

**Conflicts of interest** - None declared.

**INPLASY registration number:** INPLASY202460011

**Amendments** - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 04 June 2024 and was last updated on 04 June 2024.

**INTRODUCTION**

**Review question / Objective** Public health recommendations for wearing face masks rely heavily on an individual's compliance with the policy and other factors. The purpose of this study was to examine the effectiveness of mask-wearing for the prevention of SARS-CoV-2 in multiple real-world settings.

**Rationale** The emergence of newer and more infectious variants such as Delta and Omicron have renewed questions about the role of masks to prevent the spread of COVID-19. These variants contain mutations that can affect the virus's transmissibility and virulence, potentially impacting the efficacy and effectiveness of vaccines, therefore increasing the need to enact NPIs for help contain viral spread. Additionally, enacting policies that require the use of face masks in public to curb the spread of COVID-19 has been, and continues to be, a controversial and politicized issue. Misinformation surrounding the efficacy and

effectiveness of face masks has become a threat to the health of the public. Policy makers and public health officials urgently need high-quality evidence on the effectiveness of masking policies and the use of masks by the general population to guide the public to contain SARS-CoV-2. Evidence is needed for the effectiveness of mask-wearing in non-controlled settings that are generalizable in real-world settings.

**Condition being studied** In 2020, COVID-19 was the third leading cause of death in the U.S. and the number one cause of death for people aged 45-84 years. To date, over 6.1 million people globally have died due to COVID-19 and minoritized/underserved populations continue to be disproportionately affected.

**METHODS**

**Search strategy** Key terms were used to capture the relevant literature on mask-wearing and disease transmission. The string of key terms

includes the following: ("sars cov 2"[MeSH Terms] OR "sars cov 2"[All Fields] OR "covid"[All Fields] OR "covid 19"[MeSH Terms] OR "covid 19"[All Fields]) AND ("masks"[MeSH Terms] OR "masks"[All Fields] OR "mask"[All Fields]) AND ("transmissibility"[All Fields] OR "transmissible"[All Fields] OR "transmissibilities"[All Fields] OR "transmissibility"[All Fields] OR "transmissible"[All Fields] OR "transmissibles"[All Fields] OR "transmission"[MeSH Subheading] OR "transmission"[All Fields] OR "transmissions"[All Fields]).

**Participant or population** Studies were included if conducted in non-laboratory or controlled settings such as health care settings, worksites, schools etc. Studies were excluded if: 1) they did not parse out data specific to the effectiveness of mask-wearing and subsequent SARS-CoV-2 transmission; 2) they relied solely on statistical models to estimate the effects of mask-wearing on transmission (i.e., no primary data were collected on mask-wearing behavior).

**Intervention** Nonpharmaceutical interventions (NPIs), which are actions that persons and communities can take to help slow the spread of respiratory virus infections, are often the most readily available interventions to help slow the transmission of infectious viruses in communities. Wearing personal protective equipment (PPE), such as face masks, have long been used in previous pandemics (e.g., 1920 influenza), epidemics, and outbreaks as an important strategy to protect against the spread of infectious disease.

**Comparator** Participants, communities, states that did not follow a mask mandate or intervention.

**Study designs to be included** Randomized controlled trials, cohort, cross-sectional, case-control, and case report studies.

**Eligibility criteria** Inclusion criteria were: 1) studies written in or translated into English; 2) studies that assess the incidence of SARS-CoV-2; 3) studies that assess the behavior or policy of mask-wearing; and 4) studies conducted in non-laboratory or controlled settings such as health care settings, worksites, schools etc. Studies were excluded if: 1) they did not parse out data specific to the effectiveness of mask-wearing and subsequent SARS-CoV-2 transmission; 2) they relied solely on statistical models to estimate the effects of mask-wearing on transmission (i.e., no primary data were collected on mask-wearing behavior). The time span for the literature search

included all years available in the databases up to June of 2023.

**Information sources** Electronic databases included SCOPUS, PubMed, and CINAHL. Gray literature such as conference abstracts, county data, and government reports was also identified through the following databases and methods: 1) ProQuest, 2) MedRxiv, 3) BioRxiv, 4) backward referencing by examining the references cited in articles that met inclusion criteria; 5) Google Scholar searches which were limited to first 100 results (i.e., first 10 pages).

**Main outcome(s)** This systematic literature review aimed to identify and describe studies that focus on the behavior of mask-wearing and the outcome of SARS-CoV-2 disease transmission in various community and real-life settings.

**Quality assessment / Risk of bias analysis** Two independent reviewers will assess the quality of included studies using Joanna Briggs Institute (JBI) critical appraisal tools. A third reviewer will be consulted when discrepancies are identified. JBI critical appraisal checklists are considered suitable and the most preferred for scoring non-experimental study designs which make up the majority of studies included in this review.

**Strategy of data synthesis** Due to the overwhelming heterogeneity in effect measures and data reported in the included studies, a vote-counting methodology will be used in lieu of a meta-analysis to summarize the direction of effect (i.e., harmful, beneficial, or no association) of masking in COVID-19 transmission.

**Subgroup analysis** No subgroup analyses will be conducted.

**Sensitivity analysis** No sensitivity analyses will be conducted.

**Country(ies) involved** United States of America.

**Keywords** SARS-CoV-2, masks, real-world settings.

#### **Contributions of each author**

Author 1 - Noe Crespo.

Author 2 - Joelle Fornasier.

Author 3 - Christian Ramers.

Author 4 - John Elder.